RETURN TO NTCRA AR INDEX

JACOBS

SDMS DocID 451178

# U.S. ARMY CORPS OF ENGINEERS
# NEW ENGLAND DISTRICT

Total Environmental Restoration Contract
USACE Contract Number: DACW33-03-D-0006
Task Order No. 0005

Superfund
SITE: Aerovox
BREAK: 2.2
OTHER:

# REVIEW OF CONCEPTUAL DEMOLITION PLAN AEROVOX FACILITY TECHNICAL MEMORANDUM SEPTEMBER 2007

## VACANT AEROVOX PLANT NON-TIME CRITICAL REMOVAL ACTION

New Bedford Harbor Superfund Site
New Bedford, MA

September 2007

Prepared by
Jacobs Engineering Group
103 Sawyer Street
New Bedford, MA 02746

## TABLE OF CONTENTS

(intentionally blank)

## 1.0 INTRODUCTION

This memorandum presents findings from a review of the conceptual demolition plan for the vacant Aerovox facility in New Bedford, Massachusetts. Interim discussions on the status of the review of the conceptual plan were held with the U.S. Army Corps of Engineers, New England District (NAE) and the U.S. Environmental Protection Agency (EPA) on 29 March 2007. The topics discussed by the team during that meeting are integrated into this memorandum. This document follows the recommended approach of the 2006 Supplemental Engineering Evaluation/Cost Analysis (SEE/CA) (i.e., on-site disposal of building demolition waste).

The purpose of the review is to provide an opinion regarding implementation of the plan and considerations regarding its execution. The constraints for minimization of off-site contaminant migration were also evaluated. The basic strategy of the Conceptual Demolition Plan is to dispose of equipment, materials and demolition debris on-site to the degree possible, using the foundation of the building as a repository. The resulting debris cell would then be capped and covered, allowing the property to be reused consistent with its new condition. An integral assumption of the SEE/CA is that a final risk-based disposal approval (40 CFR § 761.61(c)) is in place, which would allow for on-site disposal of building demolition waste and allow the contaminated concrete foundation and underlying soils to remain in place.

The following documents were reviewed as part of this task:

- Engineering Evaluation/Cost Analysis (EE/CA), Aerovox, Inc., New Bedford, Massachusetts, August 1998. Blasland, Bouck & Lee, Inc. Syracuse, NY. 1998.
- Equipment Inventory Summary and Inventory Calculations for the Exterior and Floors 1-3. U.S. Army Corps of Engineers. 2005.
- Draft Performance Standards and Technical Specifications, Vacant Aerovox Plant, 740 Belleville Avenue, New Bedford, MA. 5-10-06.
- Memorandum: Don Boyé to Mark Anderson and Gary Morin. 14 June 2006. Results of Building Materials Sampling – Aerovox Building – May 2006.
- Aerovox Removal Site Administrative Record File Supplemental EE/CA. EPA 2006.

A site visit, including a walk-through of the main Aerovox building was made on 5 March 2007. Information was also developed through discussions regarding the site and the proposed demolition project with the Project Engineer for the NAE and Jacobs personnel knowledgeable about the site. In addition, a targeted structural evaluation was conducted as a simultaneous review with the conceptual demolition plan. Findings from that evaluation are included in this memorandum.

Some considerations relative to polychlorinated biphenyl (PCB) spill cleanup and disposal policy are mentioned in the following sections. It is understood that the demolition action will be subject to prior review and approval by the EPA, the Massachusetts Department of Environmental Protection, and the NAE.

## 2.0 FACILITY EQUIPMENT AND MATERIALS

In order to evaluate the volume of equipment and materials that may remain on-site, categories were developed to sort what must be disposed off-site from that with the potential for interment on-site. The EE/CA approach minimized off-site disposal/recycling for items not classifiable as Resource Conservation and Recovery Act (RCRA) or Toxic Substances Control Act (TSCA) wastes.

### 2.1 Controlled Wastes Requiring Off-Site Disposal

Any material or object characterized as RCRA hazardous waste will be disposed off-site at a properly permitted facility. The greatest volume of RCRA waste is likely to be generated by cleanup of a mercury spill in the boiler room, where mercury has impregnated porous surfaces. Broken mercury switches have resulted in localized contamination at a number of other locations in the building. Elemental mercury is present in containers in the shipping room adjacent to the boiler room, and may be found elsewhere in the building. For example, there may be some intact mercury switches. Fluorescent bulbs also contain mercury, so these would be disposed off-site as well.

Trichloroethene was used in degreasing operations at Aerovox. Cursory looks at some of the associated equipment and vessels did not indicate that significant quantities of the solvent remain, but some amount may be discovered during the demolition process. It may also be found in porous surfaces or materials as a result of spills. Spilled mercury or trichloroethene may be mixed with PCBs in some media. In that case, further testing to determine mercury and/or trichloroethene concentrations will be conducted to determine proper disposal.

A considerable amount of the Aerovox facility's product (i.e., capacitors) remain in the building. It is assumed that the majority of these do not contain PCBs, but, due to the oils within them, will require disposal in a special waste landfill. This assumption will have to be validated through review of labels or testing. It is also assumed that capacitors that contain PCBs would meet the definition of a PCB Small Capacitor and would be disposed by incineration (40 CFR § 761.60(b)(2)(v) and (vi)). PCB Large Capacitors will be handled in the same manner. There are oil-filled electrical transformers at the facility which will be disposed of as PCB Transformers in accordance with 40 CFR § 761.60(b)(1). It is possible that some of the electric motors at the site may be PCB Articles. It is assumed that these Articles contain >500 parts per million (ppm) PCBs and will be disposed by incineration or draining, then landfilling the carcass in a chemical waste landfill and handling the PCB liquid in accordance with 40 CFR § 761.60(a). Fluorescent light ballasts at Aerovox are assumed to contain PCBs in their potting material, and will be handled as PCB bulk product waste. Several disposal options are available (40 CFR § 761.62), but all entail off-site management.

Asbestos-containing materials (ACM) are present at the site. On-site disposal is a possibility, and should be planned for since some building materials containing asbestos may not be safely accessible for abatement. If on-site disposal occurs, the asbestos will be contained and disposed in a segregated area of the basement and covered with at least three feet of material. Other federal and state asbestos disposal requirements will be met to the extent possible as well. Any ACM sent off-site for disposal will be sent to an appropriately licensed facility.

There is some large refrigeration equipment on-site that is assumed to contain Freon™. Off-site draining and disposal would be necessary. Lubricant and hydraulic oils will be drained and recycled/disposed off-site.

### 2.2 Materials to Remain On-Site

As evidenced by the May 2007 building sampling report, as well as previous sampling reported in the EE/CA, PCB contamination is widespread throughout the building and associated equipment and materials. Most waste generated during demolition activities will be PCB Remediation Waste, with, potentially, a smaller portion of non-PCB Remediation Waste. A subset of these two categories is waste that may be available for recycling/off-site disposal (See Section 2.3). Both PCB Remediation Waste and non-PCB Remediation Waste will remain on-site for disposal. In addition, the PCB-contaminated concrete foundation and contaminated underlying soils will also remain on-site.

The 2006 SEE/CA contained a draft TSCA determination that would allow the concrete foundation, underlying soils and PCB remediation waste to remain on-site as a risk-based disposal under TSCA Section 761.61(c) as long as conditions set out in the determination were met. Public comments received on the SEE/CA were generally against on-site disposal of the PCB Remediation Waste. Since this document is written before EPA issues a final determination, the assumption is that the PCB Remediation Waste will still be disposed of on-site and all conditions in the draft determination will be met.

PCB Remediation Waste will be generated by structural demolition. This waste will include bricks, dry wall, ceiling panels, plywood and wood beams as well as equipment that may have contacted PCBs, after limited sampling assures protectiveness under TSCA Section 761.61(c). It is assumed that all manufacturing related PCB containers at the site (e.g., tanks, vats) contained PCBs at concentrations ≥500 ppm. Disposal requirements, then, are subject to 40 CFR § 761.60(c), which says the containers must be decontaminated in order to remain on-site. Given the size, number, and placement of tanks and vats, and the estimated weight, decontamination is presumed to be cost-effective in comparison to off-site disposal. The tanks and similar vessels are steel, so decontamination by relatively simple techniques is likely. Some test decontamination may be considered to confirm this assumption. Steel piping associated with PCB-fluid handling can also be decontaminated. Decontaminated metal waste could also be sent off-site for recycling or disposal.

Non-PCB Remediation Waste and Non-PCB Items that will remain on-site may include:

- Ovens, test chambers,
- Materials handling equipment,

- Machining equipment,
- Tools, instruments,
- Work benches, consoles,
- Conduit, electrical panels, motor controls, and
- Non-recyclable building materials.

### 2.3 Non-Controlled Wastes for Potential Off-Site Disposal/Recycling

The results of the recent building sampling report indicate that PCB contamination is widespread throughout the building and associated equipment and materials. Based on this data, demolition waste most likely to be suitable for decontamination and recycling includes copper piping, steel beams, steel shelving, and granite window sills. Other waste streams such as paper, cardboard, office furniture, etc. could be sampled on a batch basis (e.g., each roll off or dumpster sampled individually once filled) to see if non-TSCA disposal is appropriate.

### 2.4 Equipment and Materials Volume

The EE/CA estimated demolition debris (structural materials) to be approximately 11,100 cubic yards (cy) if the concrete floors and walls of the basement were left in place. The EE/CA states that no allowance was made for voids in its Building Material Volume and Mass Calculations (Attachment 11), other than for wood materials intended for off-site disposal. Therefore, a void space of 40-60% is estimated for building rubble, yielding an additional 4,440 to 6,660 cy in volume. Conservatively, the structural material estimate is 17,760 cy.

The raw volume of equipment and materials estimated to be in the facility based on the 2005 inventory is 13,731 cy. The volume of many items can be reduced by crushing. A net reduction of up to 49.4% was calculated based on potential compaction on an item-by-item basis, yielding 7,141 cy total. To allow for limitations on materials handling and manipulation, a 30% volume reduction is used in the current evaluation. This yields a more conservative volume of 9,282 cy for equipment and materials.

## 3.0 ON-SITE DISPOSAL CAPACITY

The space available for disposal in the building foundation was calculated by Jacobs in April 2006 for EPA/USACE for three scenarios, yielding the following estimates:

- Volume from basement floor to external grade: 28,200 cy
- Volume from basement floor to top of foundation: 26,300 cy
- Volume from basement floor to the higher of either external grade or top of foundation: 31,200 cy.

For purposes of this evaluation, the volume from the basement floor to top of foundation was used (26,300 cy) as the basis for determining available space. This was selected for two reasons: (1) using the top of foundation allows the existing structure to act as a retaining wall and gives the greatest stability to the entirety of the debris pile by limiting lateral movement, and (2) it is a conservative approach since a cap and cover plan has not yet been developed. In addition, the lower profile generally allows greater flexibility in the final grade at the site.

If the first floor ceiling is left in place during most of the placement of debris (which would be desirable for contaminant control) the full overhead space will not be used due to an inability to stack completely to the ceiling. A reduction of 5% is estimated for this circumstance (1,276 cy).

The volume balance for use of the basement as a repository, assuming a soil cap design is selected that allows the full use of space within the walls of the foundation, is as follows:

| | |
|---|---|
| Available space: | 26,300 cy |
| Building materials from demolition: | -17,760 cy |
| Equipment and materials: | -9,282 cy |
| Basement ceiling left-in-place | -1,276 cy |
| Balance: | -2,018 cy |

As shown above, there is approximately 8% more material for interment at the site than there is capacity available within the foundation. However, there may be different configurations for debris deposition that would yield a greater capacity for disposal. Conservative estimates have been used for voids and the degree of compaction of equipment/materials that may be achieved. Lastly, it is possible that, given the results of the 2007 building materials sampling program conducted by Jacobs for NAE/EPA, recycling of steel, granite, and other materials will be proven economical. If this conclusion is reached, it will reduce the required on site disposal volume.

## 4.0 LOGISTICAL CONSIDERATIONS

Since the EE/CA was developed, the Aerovox facility has ceased operations. The building was vacated in early 2000 and has not been maintained since, except for security and fire protection measures implemented by the City of New Bedford (City). There has been notable structural deterioration since Aerovox moved out.

### 4.1 Building Interior

On the interior, the wooden floors/ceilings are swelling and cracking as a result of water damage and freezing. There are places where the flooring has rotted and the ceiling has collapsed. In some locations, where there is tile or carpet, floor damage may be masked. Pipe hangers and other supports have corroded, in some cases to the point of failure. Some interior columns are water damaged, and some are off-plumb. Considering the deterioration, the bearing capacity of the second and third floors has most likely been diminished. The capacity can no longer be calculated because of unknowns regarding the degree and extent of deterioration. The first floor (basement) has a concrete slab and can bear the weight of heavy demolition equipment, but lifting is restricted by low ceiling height. Although the ceiling height creates a restriction on the size of equipment used, it would be maintained as long as practicable to aid in contaminant control. Therefore, use of equipment for materials handling within the building will be extremely limited on the second and third floors and constrained on the first. Most lifting and movement of heavy items will need to be made from the outside. Penetrations through the roof and exterior walls will be required.

The elevators are inoperative. Reactivation is not considered feasible for the short-term purpose of building demolition. An external electrical service would be required as well as thorough maintenance and inspection of the elevators and all mechanical components. In lieu of using the building's elevators, lifts, hoists, and cranes will be used to move equipment and materials out of and back into Aerovox using roof and wall penetrations.

The active electrical service in the building is intended for use solely by the fire detection system. Distribution and controls are not known, except by trial. In order to work safely in the building, power should be disconnected at its service point. This will be necessary for a demolition permit, but should also be done initially for relocation of materials and equipment due to the hazards within the unmaintained building. Temporary power can be established and controlled for building clearing and demolition.

## 4.2 Exterior

There are also structural concerns on the outside of the building where there is erosion of cement and mortar as well as cracking in brick walls. Deterioration of the stack is of particular concern. It is recommended that the stack be taken down early in the project to allow safe use of the south yard. Other areas with structural instability should be protected from disturbance and observed for signs of further weakening as activities in and around the building progress. Clear zones must be maintained beneath high risk areas in case of collapse.

The Aerovox property is closely abutted on the north by the active Precix facility. There is very limited room to stage equipment (e.g., cranes, lifts) on the north side of the building. Based on the need to maintain parking and traffic along the north side, it may not be possible to access this area for demolition except by special arrangement with Precix. The amount of room available to place equipment for movement of items out of the building is also limited on the east and west sides. The sidewalk on Belleville Ave. is close to the western side of the building and the hydraulic cap area on the east side also poses a restriction on the use of heavy equipment and storage.

Given these considerations, the south yard of the facility provides the majority of working space for the project. Demolition of the pump house on the south side should be considered for early performance so that more working room is available. Layout of support facilities must be planned to allow continued traffic on Hadley Street, which is important to operations at the Titleist facility.

The close proximity of residences on the west side, and the Precix and Titleist manufacturing facilities on the north and south sides will affect the approach to the work in a number of ways. Dust and emissions control will need to be stringent, with associated perimeter air monitoring. Noise will have to be moderated, and monitoring will be performed to document levels. The work hours set forth in the Technical Specifications may be subject to some modification for certain activities.

Security measures will have to be enhanced during building clearing activities and demolition. A security patrol will be engaged for off-duty hours.

## 5.0 ENVIRONMENTAL PROTECTION MEASURES

### 5.1 Surface Water Run-Off

Run-off will be generated by precipitation and water used outside the building for dust control. The parcel on which Aerovox is located is about 10 acres in size. An acre or less has a pervious surface; the remainder is paved or under roof. Precipitation is currently collected through catchments and laterals that drain to the City's stormwater collection system or to the Acushnet River. Subsurface utilities will be abandoned prior to demolition, either in-place by filling with flowable fill or by removal and disposal. Arrangements must be made to subsequently route stormwater so that it does not flood the parking area or Aerovox building, and does not flow onto abutting properties or into the Acushnet River. Run-off that contacts potentially contaminated surfaces should be segregated from that which crosses in uncontaminated areas, and routed for treatment.

Until demolition begins and exposes contaminated surfaces now protected by the building's roof, the only area exterior to the building where contamination is known to exist, as described in the EE/CA, is the asphalt parking lot from the shipping dock area near the stack, eastward to the river. Stormwater run-off samples were collected by ENSR in September 2004 and May 2005 for analysis of PCBs and total suspended solids (TSS), yielding positive results for PCB contamination. The results of this sampling are reported in the Aerovox Facility - Conceptual Site Model (ENSR 2006). For evaluation purposes, the impacted area is assumed to be about 4 acres. Precipitation in New Bedford, Massachusetts averages around 0.35 foot/month (4.2 inches). This surface area yields an estimate of 456,200 gallons of water per month to be collected and treated. This amount could potentially be reduced through limiting the size of the impacted area, the means and methods utilized for demolition and processing, and the use of best management practices. To verify the continued existence of PCB contamination in run-off water, a sampling and analysis program will be implemented.

Processing and stockpiling operations should be designed as much as possible to limit the footprint of these operations and their potential to contaminate stormwater run-off. Due to the potential for contamination, all dust suppression water must be collected and treated as necessary to meet discharge standards. Similarly, site stormwater may have to be collected and managed to meet protective levels.

Provisions for collecting water from the basement will be necessary until the cap is in place. Even with the roof on, its current condition allows some leakage. Sump pumps can be used to transfer water that accumulates on the first floor. Some ponding on contaminated flooring on the second and third levels is possible, but could likely be managed using a wet vacuum.

Run-off will also be generated by water used for dust control. Techniques will be used to minimize the amount of water used for that purpose (see Section 4.2). In combination with water used for decontamination, water generated by dust control systems during demolition activities is expected to be up to 50,000 gallons per day.

In order for the collected storm water run-off to be discharged to the City sewer, the City's pretreatment standard of 5 micrograms per liter (μg/l) must be met. During handling of materials from certain areas, confirmation sampling requirements for mercury, lead, and trichloroethene will also need to be established by the City for release into the waste water collection system.

In addition to run-off collection, sediment controls will be established. These include installation of silt fence and hay bales in front on the shoreline of the Acushnet River and sediment blocks in front of stormwater catchments.

## 5.2 Emissions and Dust Control

The close proximity of residents to the west of the site and workers in the adjacent businesses to the north and south of Aerovox mandates stringent control of dust and other emissions, paired with a comprehensive monitoring program. Best practices will include use of tools and techniques to minimize airborne contaminants.

One of the earliest steps in the demolition process will be ACM abatement. This will reduce the potential for airborne asbestos, though it is expected that fibers are contained in dusts and grit already present in the building. Hand-wiping items, with the use of wetting agents, prior to leaving the building will be the means of capturing incidental asbestos fibers. It is also recommended that remediation of mercury-contaminated areas (primarily the boiler room) take place early in the project. Elimination of mercury as a site contaminant will allow adjustment in worker's personal protective equipment and air monitoring requirements (both work area and perimeter).

Where penetrations are made to allow movement of items out of the building, contaminant control zones must be established. Provisions to prevent emissions/dust releases from the openings may include use of enclosures and decontamination measures or covering prior to movement.

During demolition, aqueous foams should be applied to surfaces to form a film that causes particulates to adhere, greatly reducing airborne releases. The foam also controls vapors, although hazardous vapors are not expected to be a significant concern at Aerovox except in areas potentially affected by trichloroethene. Using a foam in combination with deconstruction techniques (e.g., an excavator with a thumb or grappler) typically confines visible emissions to the work area and suppresses particulates overall.

Foam also has the advantage of not causing an icing problem on site. The relative volume of water in the foam is small

During deconstruction of the west and north sides of the structure, a more aggressive dust control protocol may be appropriate. A Fog Cannon® or similar dust suppression device could be used to create a mist curtain at the fenceline. The Fog Cannon® works by atomizing water and a surfactant (optional) in a directional fan, causing dust particles to bond and drop to the ground. Water can be supplied from a nearby hydrant with usage ranging from 14 to 100 gallons per minute (gpm) in a demolition application. The volume of water generated for dust suppression would be collected and treated to the established standard prior to discharge to the City sewer system.

### 5.3 Perimeter Air Monitoring

The Technical Specifications establish the property boundary as the point of compliance for emissions and dust, except for PCBs. For the west side of the property, the point of compliance will be the western sidewalk of Belleville Avenue. The parameters to be monitored in the air are particulates, PCBs, asbestos fibers, silica, mercury and lead. Depending upon findings inside the building, additional parameters, such as trichloroethene, may be added.

Action levels for airborne emissions on the site perimeter have not been established, but are expected to be similar to those for the NAE/EPA directed Atlas Tack site in Fairhaven, Massachusetts. On the west side of the site, more restrictive standards may apply. While a better assessment can be made when limits are set, the preliminary evaluation is that fenceline criteria can be met through the use of controlled demolition techniques (deconstruction), use of foam for dust and vapor suppression, and selective use of water for additional dust control. Real-time monitoring for particulates should be considered to supplement the time-weighted samples.

### 5.4 Noise Monitoring and Control

The point of compliance for noise levels will be the same as for air quality. The action level will be established by using the City code for demolition projects. With controlled demolition techniques, compliance with this requirement is not expected to be onerous. Some provisions for temporary excursions during standard work hours (not the extended work hours contemplated for the project) should be considered.

## 6.0 EQUIPMENT AND MATERIALS HANDLING CONSTRAINTS

Ideally, equipment and other items on the second and third floors of the Aerovox building would be moved directly to the first floor, minimizing decontamination and handling requirements. However, the deterioration of the upper floors (Section 3.1) limits the ability to do so. Some work-around can be achieved by avoiding deteriorating areas and installing temporary reinforcement of selected areas after structural evaluation. Traffic corridors can be set up through sound areas, and low-weight low-profile equipment can be used for movement. Equipment could include roller skids, tri-glide skids, and pallet jacks, though not on floors that have buckled severely. As the condition of the building continues to deteriorate, a subsequent evaluation of the structural integrity would be warranted prior to future intrusive work.

Size reduction of large items is also a strategy for moving equipment around structural weaknesses. However, within Aerovox, the ability to use cutting tools is restricted due to vapor emission, poor air quality, and fire prevention concerns. There are also regulatory constraints to the use of a torch on PCB-contaminated surfaces. Pre-cleaning 12 inches on either side of the planned cut, as part of an approved Work Plan, would allow hot work. Hand-held shears will be used for sizing piping, ductwork, and items of similar thickness. Machine-mounted shears will not be usable inside due to weight and height restrictions. The safest and most viable means for moving large items from the upper two floors will be through penetrations in the roof, exterior walls and possibly between floors.

The former windows at the building offer numerous points for relatively clean penetrations. While there is deterioration in the mortar and cement at some places on the exterior wall, removal of plywood and metal from the former windows represents minimal structural disturbance. The inside face of penetrations should be decontaminated and a contaminant control zone set up (interior or immediately exterior) prior to opening. Contaminant control must be maintained after the penetration is made. Penetrations should be equipped with polyethylene sheeting or other measures to provide a degree of protection from the weather. If demolition of the outside walls is phased later, temporary closures will be necessary. Installation of plywood or aluminum sheets for that purpose would be inexpensive and effective.

While the concrete slab of the first floor (basement) of the building can bear the weight of small heavy equipment (such as skid steer loaders or forklifts), the usefulness of equipment is controlled by overhead clearance. On readily available equipment, the mast could not be raised more than a few inches to a foot within the Aerovox basement. This will be adequate for lifting and movement in some areas, particularly when overhead articles have been removed, but the opportunities for stacking will be limited.

Lowering heavy items through interior penetrations in the second and third floors will facilitate handling on the interior of the building (aiding in contaminant control and reducing handling). Interior penetrations increase safety concerns, though, because of the additional fall hazards for workers and possible amplification of structural weakness. The opportunities to lower items through the upper floors to the basement are also significantly constrained by overhead clearance, but could be accomplished from the roof down with a crane.

If a temporary building is required for material handling, it should ideally be located upland of the 100-year flood plain (as shown in the SEE/CA).

## 7.0 CONCLUSIONS AND RECOMENDATIONS

The conceptual plan for clearing and demolishing the Aerovox facility lays out a good approach for controlling the source of PCB releases to the environment, mitigating a physical hazard, and starting the process of returning the site to beneficial reuse. There are two limitations that affect the baseline approach to a significant degree. First, the structural decline of the building has constrained the techniques for processing and placing building contents. Continued structural decline creates an urgency to address the hazards within the building while the materials can still be segregated. Second, it appears there may be a shortfall in the space available for equipment, materials, and demolition debris in the basement, depending upon the interment plan that is selected and the amount of material that can be recycled.

The work-around for moving equipment and materials in the diminished structure will be to work from the outside of the second and third floors. Penetrations in the walls (through former windows) and roof will be made. Items will first be moved outside (with some exceptions) in order to relocate them into the basement. This dictates more stringent decontamination of individual items and necessitates measures to control airborne contaminants at the penetrations. The move outside represents an increased handling effort compared to the original plan. However, it facilitates recycling and off-site disposal of uncontaminated or easily decontaminated items. An estimate of the potential volume of equipment and materials that can be disposed/recycled through readily available means is being developed. Off-site disposition of some portion of the building contents addresses the second limitation noted above. A reduction in the volume for on-site disposal could offset the potential shortfall capacity and may reduce the footprint and profile of the on-site disposal cell. This would reduce lifetime maintenance and monitoring requirements.

As previously noted, the Aerovox building is deteriorating at an accelerating rate. The ability to safely access and move large items is becoming limited, and will worsen. Furthermore, there are cost implications that are related to postponing the removal of hazardous materials because if areas within the building collapse the waste then becomes mixed and will be more costly to dispose. Despite security measures, trespassers enter the building and cause structural damage and damage to equipment. There is also a danger of fire from the actions of trespassers. These circumstances create an urgency to clear the building of contaminants that represent an imminent hazard and move equipment before flooring collapses and access becomes unsafe. Work could be sequenced generally as follows:

1. Asbestos abatement
2. Remediation of the mercury spills
3. Removal of other controlled wastes with off-site disposal
4. Removal of loose trash with off-site disposal
5. Removal and segregation of equipment. Route for recycling, off-site or on-site disposal
6. Items for on-site disposal can be packed into the basement prior to demolition proceeding.

Each step outlined above will reduce hazards at the site; however, because the building's structural materials are contaminated with PCBs, the threat of fire remains a significant risk. Transportation and disposal costs (assuming off-site disposal is required for certain materials), would be substantially reduced if the initial steps suggested herein are completed prior to a potential collapse or fire.